

IN THE CLAIMS:

Please cancel Claim 8 without prejudice.

Please consider the following amended claim set:

Claim 1 (Twice amended) A medical implant having a head with a pair of spaced arms and an implant closure sized to be operably threadedly received between said arms; said closure having a threadform thereon that is sized and shaped for to be threadedly received in a mating threadform on said arms; said closure and located on a first medical implant closure that is threadedly receivable in a second medical implant bone screw head between spaced arms wherein the first implant has a direction of advancement along an axis of rotation relative to the second implant said head; said threadform comprising:

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- a) a leading surface that has an inner edge and an outer edge;
 - b) a trailing surface that has an inner edge and an outer edge; and wherein
 - c) intersections of a plane passing through said axis of rotation with both said leading surface and said trailing surface slope rearwardly relative to

the direction of advancement from the respective inner edges to the outer edges thereof.

Claim 2 (Amended) The ~~threadform~~ implant according to Claim 1 wherein:

- a) the intersection of said trailing surface with a plane passing through said axis of rotation is at a first angle of from about 1° to about 45° relative to a line perpendicular to said axis of rotation.

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Claim 3 (Amended) The ~~threadform~~ implant according to Claim 2 wherein:

- a) said first angle is between about 5° and 20°.

Claim 4 (Amended) The ~~threadform~~ implant according to Claim 2 wherein:

- a) said first angle is between about 7° and 15°.

Claim 5 (Amended) The ~~threadform~~ implant according to claim 2 wherein:

- a) the intersection of said leading surface with a plane passing through said axis of rotation is at

a second angle of from about 30° to about 75°
relative to a line perpendicular to said axis of
rotation.

Claim 6 (Amended) The ~~threadform~~ implant according to Claim 2

wherein:

- a) said second angle is in the range from 40° to 50°.

Claim 7 (Amended) The ~~threadform~~ implant according to Claim 1

wherein:

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- a) said trailing and leading surfaces are
nonparallel.

Claim 8 (Canceled)

Claim 9 (Amended) The combination according to Claim 8 50

wherein:

- a) said threadform is helically wound about said
cylindrical shaped body.

Claim 10 (Original) The combination according to Claim 9 wherein:

- a) said threadform is continuous.

Claim 11 (Previously amended) The combination according to Claim 9 wherein:

- a) said threadform is in a helical pattern, but is discontinuous.

Claim 12 (Amended) The combination according to Claim 8 50 further including:

- a) the second implant having a receiving thread on an inner surface thereof; said receiving thread being sized and shaped to matingly and threadably receive said threadform.

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Claim 13 (Previously amended) A medical device comprising:

- a) a first implant having a head with a channel sized and shaped to receive a rod member and a pair of spaced arms on opposite sides of said channel;
- b) a second closure implant for closing between said arms; said closure implant having an axis of rotation and a thread on an outer surface thereof; said thread being in a helical pattern on said closure implant and having a leading surface and a trailing surface; said leading surface having inner and outer edges and said trailing surface

having inner and outer edges; intersections of both said leading surface and said trailing surface with a plane passing through said axis of rotation slope from respective inner to outer edges rearwardly with respect to a direction of advancement of said closure implant in closing said first implant; and

- c) each of said arms include a threadform on inner facing surfaces thereof sized and shaped to matingly and threadedly receive the thread of said closure implant.

P22

Claim 14 (Original) The device of Claim 13 wherein:

- a) the inner and outer edges of both said leading surface and said trailing surfaces are each spaced from the axis of rotation at substantially the same radius over substantially the entire length of the thread.

Claim 15 (Original) The device of Claim 13 wherein:

- a) said inner edges of both said leading and trailing surfaces are substantially spaced and said outer edges of both said leading and trailing surfaces

are in close proximity to each other throughout the length of the thread such that the thread is generally triangular in cross-section.

Claim 16 (Original) The device according to Claim 15 wherein:

- a) said cross-section has the general shape of an obtuse triangle.

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Claim 17 (Twice amended) In a medical implant having a head with a pair of spaced upright arms and a closure operably located between the arms, a thread positioned on ~~a~~ the closure and being sized and shaped to be threadedly received ~~between a~~ in a mating thread located on the pair of upright arms ~~of a head of a bone screw~~; said thread having an axis of rotation with a leading surface and a trailing surface relative to advancement along the axis of rotation; the improvement comprising:

- a) said trailing surface having an inner and an outer edge; said trailing surface sloping rearwardly from the inner edge to the outer edge thereof; and said inner edge having a generally constant radius over an entire length of said thread, such that, as said closure is advanced and applies force on a

bottom side thereof, said thread resists splaying of said arms.

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Claim 18 (Previously amended) In a medical implant sized and shaped for closing between a pair of arms of a head of a bone screw and having a lower surface adapted to engage and apply pressure to a rod received in the head; said implant further having a cylindrical shaped outer surface with a thread wound in a helical pattern about said outer surface and wherein said thread has a leading surface and a trailing surface relative to advancement of the implant along an axis of rotation; the improvement comprising:

- a) said trailing surface having an inner and an outer edge; any intersection of said trailing surface with a plane passing through the axis of rotation slopes rearwardly from an inner radius to an outer radius of said trailing surface over substantially the entire length of said trailing surface.

Claim 19 (Twice amended) In a medical implant having a head with a pair of spaced arms and a closure for positioning between and closing between the arms, the closure having a thread located thereon ~~on a closure for a bone screw and adapted to be threadedly received between that is operably received in a mating thread located on said spaced arms of the bone screw;~~ said thread having a leading surface and a trailing surface relative to advancement about an axis of rotation; the improvement comprising:

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- a) both said leading and trailing surfaces having respective inner and outer edges; said trailing surface sloping rearwardly from the inner edge to the outer edge thereof; said trailing surface and leading surface inner edges being spaced and said trailing surface and leading surface outer edges being in close proximity to one another, such that said thread is generally triangular in cross-section.

Claim 20 (Twice amended) The ~~thread~~ implant according to Claim 19 wherein:

- a) said cross-section is generally in the shape of an obtuse triangle.

Claim 21 (Previously amended) In a medical implant having a cylindrical shaped outer surface with a thread helically wound about said outer surface and wherein said implant is sized and shaped to be threadedly received between a pair of arms of a bone screw head and has a bottom surface adapted to abut against a rod received in said head; said thread having a leading surface and a trailing surface relative to advancement of the implant along an axis of rotation and further wherein both said trailing surface and said leading surface have respective inner and outer edges; the improvement comprising:

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- a) said leading and trailing surfaces both sloping rearwardly from respective inner to outer edges thereof; said trailing surface and leading surface inner edges being spaced and said trailing surface and leading surface outer edges being in close proximity to each other over substantially the entire length of the thread such that the thread has a substantially triangular shaped cross section.

Claim 22 (Twice amended) In an orthopedic medical implant having a head with a pair of spaced arms and including a

closure for operably closing between the arms, the closure
having a thread thereon and the arms having a mating thread;
~~on a closure sized and shaped to be threadedly received~~
~~between spaced arms of a bone screw head;~~ said thread having
a leading surface and a trailing surface relative to
advancement about an axis of rotation; the improvement
comprising wherein:

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- a) both of the intersections of said leading surface
and said trailing surface with a plane passing
through the axis of rotation slope rearwardly from
a radially inner edge to outer edge thereof; and
 - b) a first angle between the leading surface
intersection and a line perpendicular to the axis
of rotation is substantially greater than a second
angle between the trailing surface intersection
and a line perpendicular to the axis of rotation.

Claim 23 (Amended) The ~~thread~~ implant according to Claim 22
wherein:

- a) said second angle is between about 1° and 45°.

Claim 24 (Amended) The ~~thread~~ implant according to Claim 23
wherein:

- a) said first angle is greater than 30°.

Claim 25 (Amended) The ~~thread~~ implant according to Claim 22
wherein:

- a) said first angle is in the range from about 30° to 45° and said second angle is in the range from about 5° to 20°.

B₂ Claim 26 (Twice amended) In a medical implant having a head with a pair of spaced arms and including a closure for closing between said arms; said closure having thereon a thread on a closure sized and shaped to be threadedly received in a mating thread on said arms; between spaced arms of a bone screw head; said thread having a leading surface and a trailing surface relative to advancement about an axis of rotation; the improvement comprising:

- a) said leading surface and said trailing surface being non-parallel; and
- b) an intersection of a plane with said trailing surface slopes rearwardly from an inner edge to an outer edge of said trailing surface.

Claim 27 (Previously added) A medical device, comprising:

a receiver member including a plurality of wall sections defining a longitudinal bore in said medical device, said receiver member also including a transverse channel substantially perpendicular to said bore; and

a closure member including a substantially cylindrical engagement portion having a longitudinal axis, and a reverse angle thread formed on said engagement portion so that said engagement portion is adapted to be threadedly engaged within said bore to said wall sections.

B2

Claim 28 (Previously added) The medical device of claim 27,

wherein said wall sections include an inner reverse angle thread corresponding to said reverse angle thread of said engagement portion of said closure member, whereby said reverse angle thread of said wall sections and said reverse angle thread of said engagement portion are engaged when said engagement portion is threadedly engaged within said bore to said wall sections.

Claim 29 (Previously added) The medical device of claim 27,
wherein said receiver member is a part of a bone
fixation device.

Claim 30 (Previously added) The medical device of claim 29,
wherein said bone fixation device is a bone screw.

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Claim 31 (Previously added) The medical device of claim 29,
wherein said reverse angle thread includes a rearward
thread surface, wherein an angle measured from a plane
normal with said longitudinal axis to said rearward
thread surface is between about -1 degrees and -40
degrees.

Claim 32 (Previously added) The medical device of claim 31,
wherein said angle is about -5 degrees.

Claim 33 (Previously added) The medical device of claim 27,
wherein said closure member is a set screw.

Claim 34 (Previously Added) An apparatus for connecting an
elongated member and a bone, comprising:

a receiver member having an inner-threaded longitudinal bore, a channel communicating with and substantially perpendicular to said longitudinal bore for accommodating the elongated member and a fixation portion for fixing said receiver member to the bone; and

a closure member having a longitudinal axis and an outer threaded portion for threaded engagement with said threaded portion of said receiver member, wherein said threaded portion of said receiver member and said threaded portion of said closure member include a reverse angle thread.

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Claim 35 (Previously added) The apparatus of claim 34, wherein said reverse angle thread of said closure member includes a rearward thread surface such that an angle measured from a plane normal with said longitudinal axis to said rearward thread surface of said closure member is between about -1 degrees and -40 degrees, and said reverse angle thread of said receiver member includes a rearward thread surface such that an angle measured from a plane normal with an axis of said longitudinal bore to said rearward thread surface of

said receiver member is between about -1 degrees and -40 degrees.

Claim 36 (Previously added) The apparatus of claim 35 wherein said closure member is a set screw.

Claim 37 (Previously added) The apparatus of claim 34 wherein said fixation portion is integral with said receiver member.

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Claim 38 (Previously added) The apparatus of claim 34 wherein said fixation portion includes a threaded portion.

Claim 39 (Previously added) The apparatus of claim 34 wherein said bone fixation device is a bone screw.

Claim 40 (Previously added) A medical device, comprising:
a receiver member including a plurality of wall sections separated by a slot, said wall sections at least partially defining a longitudinal bore in said medical device; and
a closure member including a substantially cylindrical engagement portion having a longitudinal axis, and a

reverse angle thread formed on said engagement portion so that said engagement portion is adapted to be threadedly engaged within said bore to said wall sections.

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Claim 41 (Previously added) The medical device of claim 40, wherein said wall sections include an inner reverse angle thread corresponding to said reverse angle thread of said engagement portion of said closure member, whereby said reverse angle thread of said wall sections and said reverse angle thread of said engagement portion are engaged when said engagement portion is threadedly engaged within said bore to said wall sections.

Claim 42 (Previously added) The medical device of claim 40, wherein said receiver member includes a transverse channel substantially perpendicular to said longitudinal bore of said receiver member.

Claim 43 (Previously added) The medical device of claim 42, wherein said receiver member is a part of a bone fixation device.

Claim 44 (Previously added) The medical device of claim 43,
wherein said bone fixation device is a bone screw.

Claim 45 (Previously added) The medical device of claim 43,
wherein said reverse angle thread includes a rearward
thread surface, wherein an angle measured from a plane
normal with said longitudinal axis to said rearward
thread surface is between about -1 degrees and -40
degrees.

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Claim 46 (Previously added) The medical device of claim 45,
wherein said angle is about -5 degrees.

Claim 47 (Previously added) The medical device of claim 40,
wherein said closure member is a set screw.

Claim 48 (Previously added) The medical device of claim 40,
wherein a plurality of slots separate said wall
sections.

Claim 49 (Previously added) The medical device of claim 48,
wherein said plurality of slots form at least one
channel transverse to said longitudinal bore.

Claim 50 (New - Prior Claim 8 rewritten independently)

A medical implant closure having a threadform; said closure being adapted to be threadedly receivable in a second medical implant bone screw head between spaced arms wherein said closure has a direction of advancement along an axis of rotation relative to said head; said threadform comprising:

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- a) a leading surface that has an inner edge and an outer edge;
 - b) a trailing surface that has an inner edge and an outer edge; and wherein
 - c) intersections of a plane passing through said axis of rotation with both said leading surface and said trailing surface slope rearwardly relative to the direction of advancement from the respective inner edges to the outer edges thereof.

Claim 51 (New) In a method of resisting arm splaying in a medical implant having a head with a pair of spaced arms that operably receive a rod and a closure for threadedly closing between the arms; the method comprising the steps of:

- a) providing a reverse angle thread on said closure and a mating thread on said arms with said reverse angle thread aligned to urge said arms inwardly

toward said closure as said closure is tightened
with respect to said head; and

- 92* b) inserting said closure between said arms and
rotating said closure so as to threadedly advance
said closure relative to said arms until said
closure is set.
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